SQL Queries
(Section 4.3)

Peter Revesz

CSCE 413/813
Computer Science and Engineering
University of Nebraska – Lincoln

Hospital Database

Patient

Name	ID	CM	KG
Anderson	100	200	130
Brown	111	150	50
Davis	222	190	90
Edwards	333	160	90
Ford	345	165	100
Hardy	454	175	70
Johnson	567	170	50
Smith	755	180	120

Doctor

Name	ID	Age	Specialty
Cheney	987	50	pediatry
Hardy	454	53	osteopathology
McBride	377	36	radiology
Miller	300	60	neurology
Moss	244	30	neurology
Nelson	400	76	cardiology
Oltman	181	56	urology
Paine	266	45	cardiology
Pepper	555	42	cardiology
Snow	500	65	radiology

Visit

PID	DID	Month	Day	Year
100	181	5	20	2008
100	555	6	30	2009
111	987	8	20	2009
111	987	5	28	2010
222	266	9	12	2007
222	400	5	20	2008
222	555	5	20	2008
333	987	6	23	2009
345	300	5	16	2009
454	244	6	10	2010
567	377	2	20	2010
567	454	5	28	2010
755	987	6	23	2009

Hospital Database Extended

Height

CM	IN
⋮	⋮

Fit

Type	CM	KG
⋮	⋮	⋮

Weight

KG	LB
⋮	⋮

Diet

ID	KG	Month
⋮	⋮	⋮

SQL Queries

Example 4.3.1 Find the name, inches height, and pound weight of each patient.

```
SELECT   P.Name, H.IN, W.LB
FROM     Patient AS P, Height AS H, Weight AS W
WHERE    P.CM = H.CM AND
         P.KG = W.KG
```

Example 4.3.2 Find the name of the patients who are underweight.

```
SELECT   P.Name
FROM     Patient AS P, Fit AS F
WHERE    P.CM = F.CM AND
         P.KG = F.KG AND
         F.Type = "underweight"
```

SQL Queries

Example 4.3.3 Suppose that patients Anderson and Smith participate in dieting program. Find the time when Anderson and Smith have equal weight.

```
SELECT   D1.Month
FROM     Patient AS P1, Patient AS P2, Diet as D1, Diet AS D2
WHERE    P1.Name = "Anderson" AND
         P1.ID = D1.ID AND
         P2.Name = "Smith" AND
         P2.ID = D2.ID AND
         D1.KG = D2.KG AND
         D1.Month = D2.Month
```

SQL with Aggregation

Example 4.3.5 Find the number of overweight patients of each doctor.

```
SELECT      D.Name, COUNT(P.Name)
FROM        Patient AS P, Doctor AS D, Visit AS V, Fit AS F
WHERE       P.ID = V.PID AND
            D.ID = V.DID AND
            P.CM = F.CM AND
            P.KG = F.KG AND
            F.Type = "overweight"
GROUP BY    D.Name
```

Nested SQL Query

Example 4.3.7 Find the ID of the dieter who has the least weight at the end of 12 months.

```
SELECT   D.ID
FROM     Diet AS D
WHERE    D.Month = 12  AND
         D.KG  <=  ALL      (SELECT   D.KG
                             FROM     Diet AS D
                             WHERE    D.Month = 12)
```

SQL Practice

1. Express the following in SQL using the *Taxrecord* and the *Taxtable* relations.

   (a) Find the tax due from the taxpayer with SSN number 777889999.

   (b) Find the total taxes due from each taxpayer.

   (c) Find the SSN of the taxpayer who has to pay the most tax.

Taxrecord

SSN	Wages	Interest	Capital_Gain
111223333	10000	80	0
444556666	28000	400	0
777889999	75000	0	5000

Taxtable

Income	Tax
0	0
⋮	
10080	1512
⋮	

Solutions

1. (a)

```
SELECT   Tax
FROM     Taxrecord, Taxtable
WHERE    SSN = 777889999  AND
         Income = Wages + Interest + Capital_Gain
```

(b)

```
SELECT   SUM(Tax)
FROM     Taxrecord, Taxtable
WHERE    Income = Wages + Interest + Capital_Gain
```

(c)

```
CREATE VIEW   Due(SSN, Tax)  AS
SELECT        SSN, Tax
FROM          Taxrecord, Taxtable
WHERE         Income = Wages + Interest + Capital_Gain

SELECT   SSN
FROM     Due
WHERE    Tax >= ALL   (SELECT   Tax
                       FROM     Due)
```